Examining university students' use of social media for education

By: Sam Chu

Abstract

The majority of university students worldwide use social media in their everyday life. However, the extent to which students use such online technology for educational purposes is worth exploring. This paper reports on a research that examines university students' current and potential educational use of social media with an emphasis on students' learning processes with social media as supportive learning tools. The research also relates students' learning to five major claims of social media – user generated content (UGC), prosumer, co-creation, sharing, and communities. Before addressing students' use of social media for learning, this research first examines what students do with social media in both non-academic situations and university-related educational contexts. It then examines their perceived usefulness of various social media activities for academic and non-academic contexts. Various approaches in applying social media to facilitate students' work will also be discussed in this paper.

1. Introduction

Taking a participatory design based approach, this research examines the use of social media for learning in two courses (Knowledge Management in the BSc in Information Management program and Research Methods in the MSc in Library and Information Management program) in a university in Hong Kong in 3 iterations so that the intervention provided by the lecturer in trying to enable students to have effective use of social media may be perfected. The Knowledge Management course was studied twice in spring 2013 and spring 2014, while the Research Methods course was studied three times in spring 2013, summer 2013 and spring 2014. The overarching aim of this research is to explore and examine how university students and lecturers might make the best use of social media as part of the students' formal university education.

2. Literature review

This section starts with a definition on social media and informal/formal learning. It then reviews the five claims of social media and follows by a discussion of literature that investigated the impact of social media on informal/formal learning and various approaches to create social media environments for formal learning.

2.1 Defining social media

Scholars generally agree that social media function as tools to connect with people through communication on these sites (Trautschold, Mazo & Karch, 2011; Boyd & Ellison, 2008; Mayfield, 2008; Boyd, 2008b; Choudhury, Sundaram, John & Seligmann, 2010). Many also share the understanding that social media tools are open, accessible, outreaching and user-friendly applications that enable users to create, edit and share ideas, information and comments with each other instantly (Mayfield, 2008; Choudhury, Sundaram, John & Seligmann, 2010; Pierson & Heyman, 2011). In contrast to traditional media and Web 1.0 technology, social media provide low barriers for users to collaborate on creation and edition of works (Shirky, 2008; Leadbeater, 2008), to articulate and maintain relationships, and to form communities of similar interest at ease (Boyd, 2008b; Choudhury, Sundaram, John & Seligmann, 2010; Mayfield, 2008.

2.2 Defining informal/formal learning

Formal learning is an organised and structured mode of learning in order to achieve the learning objectives set, and leads to certification. It is structured in terms of learning objectives, time, and support. From the learners' perspective, formal learning is intentional – they aim to gain knowledge, skills and competences. This way of learning takes place in an institution (e.g. a school) in the process of formal learning, with the support of teachers (OECD, 1996). Informal learning, on the other hand, is the process of learning through daily life activities in work, family or leisure (Halliday-Wynes & Beddie, 2009). It is not structured and does not lead to certification. It has been argued increasingly that this way of learning is both formal and informal, and crossovers often occur (McGivney, 1999; Sfard, 1998; Colley Hodkinson, & Malcolm, 2002). Sfard (1998) summarizes the two dimensions of learning with the metaphors of "acquisition" and "participation", and neither is adequate in providing a wholesome education experience on its own. Colley, Hodkinson, and Malcolm (2002) acknowledge the differences between the two dimensions, but challenges the validity of regarding the formal and informal learning as separate in the practice of education.

2.3 Five claims of social media

A review of the existing literature indicates that social media can be distinguished from other forms of media by five characteristics: user generated content, prosumer, co-creation, sharing, and community.

User-generated content (UGC): In its simplest form, UGC refers to various types of publicly available media content produced by end-users (Sensarkar, 2009). UGC is considered as one of the main social media phenomena because of its popularity, user-friendliness, cheap and efficient content-sharing features (Sensarkar, 2009). For example, YouTube, being the world's biggest UGC video-on-demand system, is "re-shaping the way people watch video and TV, with millions of video producers and consumers" (Cha et al., 2007, p. 1).

Prosumers: The idea of prosumers is closely linked to the principle of UGC and products, in the sense that producers of UGC consume these products at the same time (Fuchs, 2008). Unlike traditional media, the distinction between consumer and producer for the new social media tends to blur, which has led to the increasing acceptance of the idea of prosumers as users' with the ability to control the creation and distribution of content they produce (Quan-Haase & Young, 2010). The act of prosumption is facilitated by various Web 2.0 tools (Ritzer & Jurgenson, 2010), including blog entries and comments, micro-blogs (e.g. Twitter), not to mention Wikipedia, which allows users to contribute to and consume its content at the same time.

Co-creation: Co-creation, in the context of social media technologies, refers to the process of a group of people whether they belong to a small group or mass, who co-create a piece of work online. As Tapscott and Williams (2008) stated, through social media technologies, individuals now have "the power or opportunity to link up in loose networks of peers to produce goods and services in a very tangible and ongoing way" (p.10). Social media, such as wikis and social networking sites, is found to have transformed and facilitated better collaborative work (Chu & Kennedy, 2009; Leung & Chu, 2009; Chu et al., 2012b & 2012c).

Sharing: The user-friendly nature of social media tools enable quick sharing of UGC to audience at a low cost (Lastowka, 2008). The creation of UGC, and in turn the sharing of such contents, are encouraged by the simpler, faster and cheaper production and transmission technologies (e.g. Flickr, Youtube) now made available to authors. In the cases where contents are shared to a large number of users, the action is called mass sharing. Sharing makes little demand on users, as they have a huge degree of freedom to decide whether they would like to consume the contents (Shirky, 2008).

Community: Communities are formed due to its effectiveness in facilitating communication. In social media, the communities formed are virtual, and they alter the traditional understanding of what a community is – interaction among members of a community still occurs regularly, but it is done on the

Web, without having any physical togetherness (Rheingold, 1993). The virtual environment "serves to level guests to a condition of social equality" (cited in Rheingold, 1993), allowing users to negotiate their interaction and sharing with little formality involved. Multifunctional social networking sites (e.g. Facebook and Google+) enable members to maintain their pre-existing social networks, and in some cases are used in mobilizing communities to accomplish social movements, such as election campaigns.

2.4 Impact of social media on informal/formal learning

Informed by instructional design, teachers and students may make use of social media to generate teaching and learning materials that are accessible to the online community. Knowledge sharing is much benefited in this way. For instance, a wikibook on knowledge management cases in Asia was developed by university undergraduate students as a project for their coursework (Wikibooks, 2011). This module, the contents of which were generated by students, continues to be available online. By organizing their research according to topics on an open-access, stand-alone wiki, students can collect information without having to narrow down their research scope (Rice, 2009). In another case, students have been found to upload internship-related information when blogging was incorporated into learning activities (Chu et al., 2012a).

Efficiency of collaborative learning, concerning task delegation and discussion of specific writing strategies, is improved with the use of social media. For example, with the help of 'Delicious', a social bookmarking site that allows users to record real-time flow of information, students' databases are constructed and upgraded daily (or hourly), reflecting what information was necessary and how the project goal is affected (Rice, 2009). In wiki-based collaborative projects, students can post most of their work on their open-access wiki for writing and editing, and by leaving the wiki public; they received feedback from the Internet audience. This example concretely demonstrates how social media could be useful tools for collaborative creation in education through building a better information pool, saving coordination time and facilitating co-construction of group work.

2.5 Various approaches to create social media environments for formal learning

There are three approaches regarding the creation of social media environment for students' formal learning: teacher-led, student-led and teacher and student-led. Teacher-led means teacher decide which social media to use and to design the social media environment for their students to use. Student-led refers to situations in which students take the initiative to decide which social media tools to use and also design their own social environment. Teacher and student-led is participatory design approach, which emphasizes the active role of users (both teachers and students) in the design process (Reich, Konda, Monarch, Levy & Subrahmanian, 1996). Taking a participatory approach may help develop effective environment(s) suitable for students' learning using one or more social media tools. Five requirements need to be available to users when implementing participatory design: (1) access to relevant information, (2) possibility of assuming independence in addressing problems, (3) contribution to decision-making, (4) appropriate development methods and (5) possibility of alternative technical and organizational conditions (Kensing, 1983; Clement & van den Besselar, 1993). In a participatory design approach, users' skills, experiences and interests become important considerations (Kensing & Blomberg, 1998), which increases the likelihood that the tools would be useful and integrated well into the students' learning processes. In this research, social media tools were developed with the students, with the aim of creating a useful and effective learning environment.

3. Research questions and research methods

Despite the educational benefits of social media, only a critical mass of practitioners are exploring innovative teaching approaches that make use of social media tools (McHaney, 2011; Zhang, Flammer & Yang, 2010). McHaney (2011) pointed out that the millennial students have been empowered by social media tools that have significantly influenced their lifestyle to become highly personalized. Despite such drastic change in students' lifestyle and hence learning expectations, McHaney found that

only 20% of teachers in the United States use social media tools in their lessons. Educators are urged to search for new ways to make pedagogical use of social media tools because the education community is rapidly moving towards a critical point where the incorporation of such technology could be inevitable. In order to fully utilize social media in educational settings, investigations on the kinds of social media that students are using, how they utilize these tools for everyday life, informal and formal learning as well as how teachers and students can co-create social media environment to facilitate learning would be critical. However, research on these issues remains scare. Based on the gaps identified in the literature review, the following 3 research questions (RQ) were formulated:

RQ1: What are students currently doing with social media in each of the three domains (everyday life, informal learning and formal learning)?

RQ2: To what extent are the five claims of social media apparent in the use/engagement of social media in the three domains?

RQ3: How can lecturers and students make use of the participatory design method to co-create social media environments for formal learning?

This research takes the quantitative research approach in surveying students and in analyzing the data.

3.1 Participants / Sampling

The researcher conducted this research in a university in Hong Kong where he invited students who took 2 courses that he taught - Knowledge Management in the BSc in Information Management program and Research Methods in the MSc in Library and Information Management program. Because this research introduced intervention in students' learning of social media, it thus made it difficult to involve students in courses that the researcher was not personally involve in. Therefore, convenience sampling method (Creswell 2008) is adopted and the researcher invited his only students to participate in this research.

The Knowledge Management course was studied twice in spring 2013 and in spring 2014, while the Research Methods course was studied three times in spring 2013, summer 2013 and spring 2014. While all students received the learning intervention designed by the researcher, the research participants included only those who gave their informed consent after having been duly informed about the study methods and implications (BScIM n = 30; MScLIM n = 71). Students in the 2 courses received information and instruction on how social media may facilitate learning from the beginning to the end of the courses.

3.2 Data Collection

The data collection started in the beginning of the term with a questionnaire designed to survey all the participating students who were taking the 2 courses mentioned above. The response rates for BSc and MSc students are 85% (30 out of 35) and 87% (71 out of 81) respectively.

For both courses, students in groups of 3-5 engaged in a project work using a social media for a period of about 2-2.5 months. To provide students support in building the online platform for their group work and in commenting on the content of their work, students were asked to make appointment twice and to meet the lecturer (the researcher) at his office. Each meeting last for about an hour. Within a few months after the end of the 2 courses, individual phone interview were conducted with students who could be reached and were willing to be interviewed. A total of 27 students were interviewed (BScIM n = 4; MScLIM n = 23).

3.3 Data analysis

Responses on the Likert-type scales were summarized using descriptive statistics, and mean scores that were higher than 3 were interpreted as edging toward the positive, while mean scores that were lower than 3 were interpreted as edging toward negative feedback. Ratings on students' usage of social media on the three domains (everyday life, informal learning and formal learning) were tested using the one-sample Kolmogorov–Smirnov test for normality. Since the results showed that the normality of data was questionable ($p < 0.05$ in Kolmogorov–Smirnov test), the Mann–Whitney test was used to compare the responses between the BScIM and MScLIM groups. Statistical significance level was set at $p < 0.05$. Any data point which "below Q1 – 2.2 × IQR" or "above Q3 + 2.2 × IQR" is viewed as outlier and they were excluded from the analysis. (Hoaglin & Iglewicz, 1987). Students' views on their experience in utilizing the participatory design method to co-create social media environment conducive for formal learning and whether they have been using more social media now for formal learning than at the start of the course were quantified. Descriptive statistics, and mean scores are provided in Table 7.

4. Results

4.4.1 Addressing RQ1: What are students currently doing with social media in each of the three domains (everyday life, informal learning and formal learning)?

RQ1 was then split into 3 sub-questions as follows:
RQ1.1 What are students currently doing with social media in everyday life?
RQ1.2 what are students currently doing with social media in informal learning?
RQ1.3 what are students currently doing with social media in formal learning?

4.4.1.1 Addressing RQ1.1: What are students currently doing with social media in everyday life?

Table 1: Comparing the number of time(s) per week of using **social media tools in everyday life** between BScIM students and MScLIM students

	BScIM			MScLIM			Sig.
	n	Mean	(SD)	n	Mean	(SD)	
Blogs	12	4.00	3.49	43	5.81	9.61	0.79
Delicious	3	2.33	2.31	14	3.93	7.59	0.89
Facebook$	27	18.22	14.66	63	12.63	11.69	0.09
Flickr$	1	3.00	~	8	3.13	3.44	0.42
Forum	19	11.42	22.11	41	6.88	11.09	0.82
Google Doc$	20	8.55	7.57	35	10.40	35.01	0.05*
Instagram	9	2.22	2.05	12	3.08	2.47	0.62
Line	9	8.56	8.60	20	33.40	86.42	0.60
LinkedIn$	5	3.40	3.78	9	1.89	1.36	0.47
Photobucket	2	6.00	5.66	4	1.00	0.00	0.03*
QQ#	4	11.00	12.28	32	8.00	5.19	0.96
Renren Network#	2	19.00	12.73	22	7.50	8.84	0.08
Skype	17	3.65	3.71	20	4.15	6.71	0.42
Twitter$	5	3.80	6.26	12	6.58	8.42	0.16
WhatsApp	25	32.16	31.70	55	39.35	59.13	0.29
WeChat/Weixin#	8	9.13	5.19	19	16.32	10.85	0.02*
Weibo#	3	2.33	2.31	32	16.31	20.82	0.02*
Wiki$	18	9.33	11.85	46	10.30	17.79	0.57
YouTube$	26	22.88	46.31	58	7.86	8.28	0.02*

Notes: ~ = data not available ; *p ≤ 0.05
Instagram, Line, and WeChat/Weixin are additional variables in the survey conducted in 2014
Social media tools which marked with a dollar sign are not accessible in mainland China

Social media tools which marked with a pound sign are created in mainland China
Figures in italic means that at least 1/3 of students have used the social media tool for 3 times or more per week on average

Table 1 shows that at least 1/3 of students in both BScIM and MScLIM programs have used 8 kinds of social media tools for 3 times or more per week on average. The ones common for both groups were blogs, Facebook, forum, Google Doc, Whatsapp, Wiki and YouTube. One that was unique for BScIM students (at least 1/3 of them have used it for 3 times or more per week on average) was Skype, while the unique ones for MScLIM students were QQ and Weibo.

Among the 19 social media tools listed in the table, 5 (26%) of them had a statistical significant difference between the BScIM and MScLIM students. BScIM students have used Photobucket and YouTube significantly more often than the MScLIM students, while MScLIM students have used Google Doc, WeChat/Weixin and Weibo significantly more often.

4.4.1.2 Addressing RQ1.2: What are students currently doing with social media for informal learning?

Table 2: Comparing the number of time(s) per week of using **social media tools in informal learning** between BScIM students and MScLIM students

	BScIM			MScLIM			Sig.MW
	n	Mean	(SD)	n	Mean	(SD)	
Blogs	5	3.00	2.92	20	3.75	4.68	0.86
Delicious	3	1.33	0.58	5	1.20	0.45	0.69
Facebook$	19	8.32	11.31	28	5.64	4.95	0.52
Flickr$	0	~	~	1	3.00	~	0.32
Forum	15	4.13	3.38	24	4.13	2.83	0.58
Google Doc$	19	7.79	8.11	33	5.00	6.84	0.05*
Instagram	5	3.60	2.30	4	9.25	9.29	NA
Line	4	4.75	4.50	5	2.80	2.49	0.70
LinkedIn$	2	1.00	0.00	3	1.33	0.58	0.41
Photobucket	1	5.00	~	0	~	~	NA
QQ#	0	~	~	17	5.29	4.04	NA
Renren Network#	1	5.00	~	12	5.83	8.01	0.59
Skype	9	3.11	3.22	7	3.43	3.46	0.91
Twitter$	3	2.33	2.31	3	1.67	1.16	0.80
WhatsApp	15	11.33	6.18	29	7.17	6.50	0.02*
WeChat/Weixin#	3	5.67	4.51	17	8.65	5.22	0.31
Weibo#	1	4.00	~	17	15.18	23.71	0.33
Wiki$	19	8.58	11.35	41	8.98	17.19	0.28
YouTube$	18	17.56	50.82	33	4.03	2.72	0.66

Notes: ~ = data not available ; NA = Mann-Whitney test cannot be performed; *p ≤ 0.05
Instagram, Line, and WeChat/Weixin are additional variables in the survey conducted in 2014
Social media tools which marked with a dollar sign are not accessible in mainland China
Social media tools which marked with a pound sign are created in mainland China
Figures in italic means that at least 1/3 of students have used the social media tool for 3 times or more per week on average

Table 2 shows that at least 1/3 of students in both BScIM and MScLIM programs have used 6 kinds of social media tools for 3 times or more per week on average. The ones common for both groups were Facebook, forum, Google Doc, Whatsapp, Wiki and YouTube.

Among the 19 social media tools listed in the table, 2 (11%) of them had a statiscial significant difference between the BScIM and MScLIM students. BScIM students have used Google Doc and Whatsapp significantly more often than the MScLIM students.

4.4.1.3 Addressing RQ1.3: What are students currently doing with social media in formal learning?

Table 3: Comparing the number of time(s) per week of using **social media tools for formal learning** between BScIM students and MScLIM students

	BScIM			MScLIM			Sig.MW
	n	Mean	(SD)	n	Mean	(SD)	
Blogs	2	4.00	1.41	10	3.20	3.26	0.32
Delicious	3	1.67	1.16	9	1.11	0.33	0.32
Facebook$	13	12.23	17.08	11	2.36	1.21	0.02*
Flickr$	1	3.00	~	1	5.00	~	0.38
Forum	12	4.25	3.44	24	4.87	3.84	0.02*
Google Doc$	17	9.35	10.43	35	4.57	3.40	0.43
Instagram	1	1.00	~	0	~	~	NA
Line	3	1.67	1.16	1	1.00	~	0.56
LinkedIn$	3	1.00	0.00	2	1.00	0.00	1.00
Photobucket	1	2.00	~	0	~	~	NA
QQ#	0	~	~	6	3.33	3.62	NA
Renren Network#	1	3.00	~	2	1.00	0.00	0.16
Skype	7	3.29	2.93	2	5.50	6.36	0.76
Twitter$	2	2.50	2.12	0	~	~	NA
WhatsApp	12	8.00	7.06	14	6.14	5.42	0.72
WeChat/Weixin#	1	1.00	~	7	5.29	6.78	0.18
Weibo#	0	~	~	6	10.67	19.60	NA
Wiki$	19	8.37	13.37	32	9.41	20.87	0.53
YouTube$	15	3.93	5.15	29	3.00	2.10	0.53

Notes: ~ = data not available ; NA = Mann-Whitney test cannot be performed; *p ≤ 0.05
Instagram, Line, and WeChat/Weixin are additional variables in the survey conducted in 2014
Social media tools which marked with a dollar sign are not accessible in mainland China
Social media tools which marked with a pound sign are created in mainland China
Figures in italic means that at least 1/3 of students have used the social media tool for 3 times or more per week on average

Table 3 shows that at least 1/3 of students in both BScIM and MScLIM programs have used 4 kinds of social media tools for 3 times or more per week on average. The ones common for both groups were forum, Google Doc, Wiki and YouTube. Ones that were unique for BScIM students (at least 1/3 of them have used it for 3 times or more per week on average) were Facebook and Whatsapp.

Among the 19 social media tools listed in the table, 2 (11%) of them had a statiscial significant difference between the BScIM and MScLIM students. BScIM students have used Facebook significantly more often than the MScLIM students, while MScLIM students have used forum significantly more often.

4.4.2 Addressing RQ2: To what extent are the five claims of social media apparent in the use/engagement of social media in the three domains?

Table 4: Comparing **the number of time(s)** per week of performing the activities in the five claims of social media on three domains between BScIM students and MScLIM students

	BScIM			MScLIM			Sig. MW
	n	Mean	(SD)	n	Mean	(SD)	
Everyday Life							
Generate new content on SM	*19*	*8.84*	7.35	*57*	*6.09*	4.95	0.23
Produce and consume info on one SM	*24*	*9.67*	10.35	*63*	*7.35*	6.46	0.71
Work with others to co-construct content on SM	*16*	*6.44*	6.20	47	4.06	3.56	0.30
Share content with others	*24*	*7.75*	10.54	*62*	*8.68*	10.16	0.33
Socialize with people shared the same interests	*24*	*9.88*	9.60	*65*	*10.80*	12.28	0.61
Informal Learning							
Generate new content on SM	11	4.18	3.19	47	3.40	2.83	0.40
Produce and consume info on one SM	*16*	*6.69*	5.71	46	4.17	4.13	0.13
Work with others to co-construct content on SM	17	4.24	3.58	39	3.51	3.66	0.52
Share content with others	*17*	*7.41*	6.79	48	4.85	4.84	0.19
Socialize with people shared the same interests	*18*	*8.22*	6.34	*46*	*7.00*	8.69	0.33
Formal Learning							
Generate new content on SM	13	4.38	3.23	42	3.55	3.61	0.22
Produce and consume info on one SM	15	4.73	4.11	42	3.67	3.16	0.29
Work with others to co-construct content on SM	14	4.14	2.44	49	3.57	3.82	0.10
Share content with others	15	3.87	3.29	47	3.98	3.84	0.66
Socialize with people shared the same interests	*13*	*6.31*	5.42	44	4.05	3.72	0.05*

Notes: Any data point which "below Q1 − 2.2 × IQR" or "above Q3 + 2.2 × IQR" is viewed as outlier and they were excluded from the analysis; *$p \leq 0.05$; Figures in italic means that at least 1/3 of students have performed the particular activity for 3 times or more per week on average

Table 4 shows that at least 1/3 of students in both BScIM and MScLIM programs have used social media tools to perform different activities for 5 times per week or more on average for 4-5 claims in everyday life. The claims that were common for both groups include: generate new content on SM; produce and consume information on one SM; share content with others; and socialize with people shared the same interests. The unique claim for BScIM students (at least 1/3 of them performed it for 5 times or more per week on average) was to work with others to co-construct content on SM.

For informal learning, at least 1/3 of students in both BScIM and MScLIM programs have used social media tools to perform different activities for 5 times per week or more on average for 1-3 claims. The common claim was to socialize with people shared the same interests. The unique claim for BScIM students include: produce and consume info on one SM; and share content with others.

For formal learning, the unique claim for BScIM students was to socialize with people who shared the same interests for formal learning.

Table 5: Comparing the length of time (in hours) per week of performing the activities in the five claims of social media on three domains between BScIM students and MScLIM students

	BScIM			MScLIM			Sig. MW
	n	Mean	(SD)	n	Mean	(SD)	
Everyday Life							

	n	Mean	SD	n	Mean	SD	Sig.
Generate new content on SM	*17*	*16.47*	28.90	*49*	*5.29*	4.61	0.15
Produce and consume info on one SM	*25*	*14.64*	24.31	*58*	*6.47*	6.62	0.13
Work with others to co-construct content on SM	*19*	*10.32*	12.36	*47*	*3.96*	2.81	0.02*
Share content with others	*22*	*10.18*	13.90	*56*	*4.96*	5.32	0.32
Socialize with people shared the same interests	*21*	*13.57*	25.81	*60*	*6.10*	8.09	0.09
Informal Learning							
Generate new content on SM	*14*	*14.21*	26.72	34	3.74	4.52	0.08
Produce and consume info on one SM	*20*	*11.45*	22.67	41	3.56	4.33	0.03*
Work with others to co-construct content on SM	*16*	*6.56*	7.54	33	3.27	4.23	0.07
Share content with others	*19*	*8.53*	11.72	38	4.55	5.74	0.08
Socialize with people shared the same interests	*21*	*10.10*	21.61	39	3.79	5.11	0.07
Formal Learning							
Generate new content on SM	*16*	*8.50*	9.99	32	4.88	6.10	0.02*
Produce and consume info on one SM	*20*	*7.40*	8.98	38	4.53	6.22	0.02*
Work with others to co-construct content on SM	*17*	*13.00*	12.79	39	4.08	3.59	0.00*
Share content with others	*18*	*6.11*	5.25	37	3.46	3.48	0.02*
Socialize with people shared the same interests	17	4.76	4.79	29	3.28	3.41	0.09

Notes: Figures in italic means that at least 1/3 of students have performed the particular activity for 5 hours or more per week on average; *p ≤ 0.05

Table 5 shows that at least 1/3 of students in both BScIM and MScLIM programs have used social media tools to perform different activities for 5 hours per week or more on average for 3-5 claims in everyday life. The claims that were common for both groups include: generate new content on SM; produce and consume information on one SM; and socialize with people shared the same interests. The unique claims for BScIM students (at least 1/3 of them spent 5 hours or more per week on average on this activity) were to work with others to co-construct content on SM; and share content with others.

For informal learning, the unique claims for BScIM students include all five claims on social media.

For formal learning, the unique claims for BScIM students include: generate new content on SM; produce and consume info on one SM; work with others to co-construct content on SM; and share content with others.

Table 6: Comparing the BScIM and MScLIM students' agreement on the usefulness of the activities in the five claims of social media on three domains

	BScIM			MScLIM			Sig. MW
	n	Mean	(SD)	n	Mean	(SD)	
Everyday Life (overall mean = 4.08; SD = 0.63)							
Generate new content on SM	26	3.81	0.75	68	3.84	0.91	0.74
Produce and consume info on one SM	29	4.31	0.60	70	4.07	0.80	0.19
Work with others to co-construct content on SM	26	4.04	0.77	62	3.81	0.99	0.38
Share content with others	29	4.28	0.80	66	4.23	0.80	0.78
Socialize with people shared the same interests	29	4.34	0.61	68	4.41	0.83	0.31
Informal Learning (overall mean = 3.83; SD = 0.68)							
Generate new content on SM	25	3.80	0.71	61	3.66	0.87	0.74
Produce and consume info on one SM	28	4.04	1.00	60	3.63	0.90	0.19
Work with others to co-construct content on SM	25	4.00	0.76	61	3.62	0.86	0.38

Share content with others	26	4.23	0.77	62	3.85	0.85	0.78
Socialize with people shared the same interests	25	4.20	0.76	60	3.75	0.82	0.31
Formal Learning (overall mean = 3.76; SD = 0.78)							
Generate new content on SM	25	3.60	0.91	60	3.63	0.94	0.64
Produce and consume info on one SM	27	3.89	1.01	56	3.54	1.01	0.08
Work with others to co-construct content on SM	26	4.00	0.80	60	3.90	1.05	0.91
Share content with others	26	4.04	0.87	60	3.92	1.00	0.72
Socialize with people shared the same interests	25	3.44	1.12	56	3.61	1.00	0.56

Notes: 1 = strongly disagree; 5 = strongly agree; $*p \leq 0.05$

Table 6 shows that there is no significant difference between the BScIM and MScLIM students' agreement on their perceived usefulness of the different social media activities on the three domains. All the mean scores are above the midpoint of 3.0, which suggests that students on average agreed that the different activities described in the 5 claims are useful in their everyday life as well as for informal and formal learning.

4.4.3 Addressing RQ3: How can lecturers and students make use of the participatory design method to co-create social media environments for formal learning?

Table 7: Students' views on their experience in utilizing the participatory design method to co-create social media environment conducive for formal learning

	Strongly disagree < --------------- > Strongly agree					Mean	SD
(n =27)	1	2	3	4	5		
1. I had sufficient access to relevant information (e.g., articles, introductory workshop) about applying social media in formal learning.	0 (0%)	1 (3.7%)	3 (11.1%)	14 (51.9%)	9 (33.3%)	4.15	0.77
2. I felt that I had the autonomy/independence in solving problems that were related to the SM platform design.	0 (0%)	2 (7.4%)	6 (22.2%)	15 (55.6%)	4 (14.8%)	3.78	0.80
3. I contributed to the decision making process regarding which SM tool to employ for the group project.	1 (3.7%)	1 (3.7%)	6 (22.2%)	10 (37%)	9 (33.3%)	3.93	1.04
4. I had the opportunity to decide to change my group's SM platform when needed.	1 (3.7%)	1 (3.7%)	5 (18.5%)	15 (55.6%)	5 (18.5%)	3.81	0.92
5. If I were the lecturer, I would implement this participatory design method in order to help my students design the SM platform for their group project	0 (0%)	4 (14.7%)	3 (11.1%)	4 37.0%)	5 (18.5%)	3.96	1.06
6. I have been using more SM now for formal learning than at the start of the course?	2 (7.4%)	2 (7.4%)	8 (29.6%)	9 (33.3%)	6 (22.2%)	3.56	1.155

1 = strongly disagree; 5 = strongly agree

Table 7 contains the descriptive data of students' views on their experience in utilizing the participatory design method to co-create social media environment conducive for formal learning and whether they have been using social media more now for formal learning than at the start of the course. These data is extracted and quantified from 27 individual student interviews. In general, students' think that their experience with the participatory design method in the course (items 1 - 4) has been positive (mean ranges from 3.81 to 4.15). Students on average indicate that if they were the lecturer, they would implement the participatory design method in the course (item 5, mean = 3.96). Also, at least half of the students (n =15; 55.5%) agree or strongly agree that they have been using more social media now for formal learning than at the start of the course (item 6).

5. Discussion

The findings reveal that students from both the BScIM and MScLIM groups have used social media most often in everyday life. At least 1/3 of students in both BScIM and MScLIM programs have used 8 kinds of social media tools in everyday life for 3 times or more per week on average, followed by informal learning (6 kinds of SM) and least for formal learning (4 kinds of SM). This finding suggests that most of the students are not utilizing social media tools for formal learning as much as they do in everyday life at the beginning of the course. By the end the of course, the student interview data indicates that students generally agree that they have been using more social media now for formal learning than at the start of the course (mean = 3.56). However, further investigation is needed in order to find out factors that facilitate and hinder students' learning with social media tools.

In terms of the extent to which the five claims of social media apparent in the use of social media in the three domains, it is found that the number of time and length of time (in hours) per week for performing different activities using social media from both the BScIM and MScLIM groups are more obvious in the domain of everyday life, followed by informal learning and then formal learning. This finding seems to suggest that students are not engaged in the activities as described in the five claims of social media for informal and formal learning as much as they do in everyday life. In terms of students' perceived usefulness of the activities in the five claims of social media, students generally agree that they are useful for all three domains, with a relatively stronger agreement for everyday life (mean =4.08), followed by informal learning (mean = 3.83) and then formal learning (mean = 3.76). This finding suggests that students' views on the usefulness of activities in the 5 claims of social media (Table 6) seems to link to their frequency of use (Tables 4 & 5), i.e. students tend to perform social media activities relatively more frequently on the domain that they find most useful. Nevertheless, as students generally agree that social media is useful for both academic and non-academic purposes and their experience in co-creating social media environments with lecturers for formal learning has been found positive, measures may be taken to help students fully utilize social media tools in educational contexts.

6. Conclusion

This research examined university students' use of social media for everyday life, informal learning and formal learning. It also investigates the extent to which the five claims of social media apparent in the use of social media in the three domains. Finally, it evaluates if it is desirable to adopt the participatory design method to co-create social media environments for formal learning between the lecturer and students.

With the advanced development of social media tools and technology, it is not surprising to see that using social media in everyday life is a common practice for most of the students. Yet, the advantages of social media tools do not seem to be fully utilized by university students for academic purposes. Although students generally agree that social media is useful for both informal and formal learning, the frequency of social media use for academic purposes does not seem to match well with their assumption of the usefulness of the these tools for formal learning. This lack of use of social media for formal learning may be a reflection of the limited use of social media tools required from their preivious course

work and this finding seems to align with the literature that only a critical mass of practitioners are exploring teaching approaches with the aid of social media (McHaney, 2011; Zhang Flammer & Yang, 2010). Given that the questionnaire data was collected at the beginning of the course, further investigation of students' usage of social medial tools would be worth exploring.

This paper mainly contains the first phrase of study with findings drawn mostly from the quantitative data analysis. In the second phase of the study, qualitative data analysis will be conducted to provide a more in-depth view in terms of students' learning experiences with different social media tools. Factors which facilitate and hinder students' learning with social media tools will be explored and the relationship between students' perceived familiarity and their perceived usefulness of various social media tools for academic and non-academic purposes will be investigated. With the quick development and advancement of social media tools, the five claims of social media have become more popular and regular practices for social media users. New directions for utilizing social media for educational purposes are yet to be explored.

References

Boyd, D. M., & Ellison, N. B. (2008). Social network sites: Definition, history and scholarship. *Journal of Computer-Mediated Communication*, *13*, 210-230.

Boyd, D.M. (2008b). *Taken out of context: American teen sociality in networked publics*. Unpublished doctoral dissertation, University of California, Berkeley, United States.

Cha, M., Kwak, H., Rodriguez, P., Ahn, Y., & Moon, S. (2007). "I Tube, You Tube, Everybody Tubes: Analyzing the World's Largest User Generated Content Video System." In *Proceedings of the 7th ACM SIGCOMM Conference on Internet Measurement* (pp. 1-14). San Diego, California, USA: ACM.

Chu, S.K.W. (2008). TWiki for knowledge building and management. *Online Information Review*, 32(6): 745-758.

Chu, S.K.W., Chan, C.K.K., & Tiwari, A.F.Y. (2012a). Using blogs to support learning during internship. *Computers & Education*.

Chu, S.K.W., & Kennedy, D.M. (2011). Using online collaborative tools for groups to co-construct knowledge. *Online Information Review, 35(4):* 581-597.

Chu, S.K.W., Lee, T.L., & King, R.B. (2012b). Writing with others in wiki: An investigation of student collaborative writing in English among Chinese secondary students. Paper presented at DGI-Conference 2012, Germany.

Chu, S.K.W., Tavares, N.J., Chu, D., Ho, S.Y., Chow, K., Siu, F.L.C., & Wong, M. (2012c). *Developing upper primary students' 21st century skills: inquiry learning through collaborative teaching and Web 2.0 technology*. Hong Kong: Centre for Information Technology in Education, Faculty of Education, The University of Hong Kong.

Choudhury, M. D., Sundaram, H., John, A., & Seligmann, D. D. (2010). Analyzing the Dynamics of Communication in Online Social Networks. In *Handbook of Social Networks Technologies and Applications*, Eds. Borko Furht, 2010, Springer, pp 59-94.

Clement, A., & P. Van den Besselar (1993): A Retrospective Look at PD Projects. In M. Muller and S. Kuhn (eds.): *Participatory Design: Special Issue of the Communications of the ACM*, vol. 36 (4), 29–39.

Colley, H., Hodkinson, P., & Malcolm, J. (2002). Non-formal learning: Mapping the conceptual terrain. *Consultation report,* Leeds: University of Leeds Lifelong Learning Institute.

Creswell, J. (2008). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, N.J.: Pearson/Merrill Prentice Hall.

Fuchs, C. (2008). Review of the book *Wikinomics: How Mass Collaboration Changes Everything. International Journal of Communication, 2,* 1-11.

Halliday-Wynes, S., & Beddie, F. (2009). *Informal Learning. At a Glance*. National Centre for Vocational Education Research Ltd. PO Box 8288, Stational Arcade, Adelaide, SA 5000, Australia.

Hoaglin, D. C., & Iglewicz, B. (1987). Fine tuning some resistant rules for outlier labeling, *Journal of Amercian Statistical Association*, 82, 1147 -1149.

Kensing, F. (1983). The Trade Unions Influence on Technological Change. *Systems Design For, With and By the Users.* North Holland.

Kensing, F., & Blomberg, J. (1998). Participatory design: Issues and concerns. *Computer Supported Cooperative Work (CSCW), 7*(3), 167-185.

Lastowka, G. (2008) User-Generated Content and Virtual Worlds. *Vanderbilt Journal of Entertainment and Technology Law*, 10, 893-918.

Leadbeater, C. (2008) *WE-THINK: Mass innovation, not mass production.* London: Profile Book Ltd.

Leung, K., & Chu, S. K. W. (2009). Using wikis for collaborative learning: A case study of an undergraduate students' group project in Hong Kong. Paper presented at the International Conference on Knowledge Management 2009, The University of Hong Kong, Hong Kong.

Mayfield, A. (2008). *What is Social Media?* UK: iCrossing. Retrieved May 16, 2014, from: http://www.icrossing.co.uk/fileadmin/uploads/eBooks/What_is_Social_Media_iCrossing_ebook.pdf

McGivney, V. (1999). *Informal learning in the community: a trigger for change and development* (Leicester: NIACE).

McHaney, R. (2011). *The new digital shoreline: How Web 2.0 and millennials are revolutionizing higher education.* Sterling, VA: Stylus.

OECD (1996). *Lifelong Learning for All*. OECD, Paris.

Pierson, J. and Heyman, R. (2011). Social media and cookies: challenges for online privacy. *Info, 13(6)*, 30-42.

Quan-Hasse, A. and Young, A. (2010). 'Uses and Gratifications of Social Media: A comparison of Facebook and Instant Messaging.' *Bulletin of Science Technology & Society, 30,* 350-361.

Reich, Y., Konda, S. L., Monarch, I. A., Levy, S. N., & Subrahmanian, E. (1996). Varieties and issues of participation and design. *Design Studies, 17*(2), 165-180.

Rheingold, H. (1993). The virtual community: Homesteading on the electronic frontier, Retrieved May 16, 2014, from: http://www.rheingold.com/vc/book/

Rice, J. A. (2009). Devising collective knowledges for the technical writing classroom: A course-based approach to using Web 2.0 writing technologies in collaborative work tutorial. *IEEE Transactions on Professional Communication*, 52(3), 303-315.

Ritzer, G., & Jurgenson, N. (2010). Production, consumption, prosumption: The nature of capitalism in the age of the digital "prosumer". *Journal of Consumer Culture*, *10*(1), 13-34.

Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27(2), 4-13.

Sensarkar, N. (2009). How prepared is the Indian entertainment industry to tackle the challenges posed by Web2.0? *Journal of Intellectual Property Law & Practice*, *4 (8),* 592-599.

Shirky, C. (2008). *Here Comes Everybody: The Power of Organizing Without Organizations*. New York: The Penguin Press.

Tapscott, D., & Williams, A. D. (2008). *Wikinomics: How Mass Collaboration Changes Everything.* New York: Penguin Group.

Trautschold, M., Mazo, G., & Karch, M. (2011). *Droid made simple: for the droid, droid x, droid 2 and droid 2 global*. New York: Springer Science Business Media.

Wikibooks (2011). Knowledge Management Cases in Asia. Retrieved May 16, 2014, from: http://en.wikibooks.org/wiki/Knowledge_Management_Cases_in_Asia.

Zhang, S., Flammer, C., & Yang, X. (2010). Uses, challenges, and potential of social media in higher education: Evidence from a case study. In C. Wankel (Ed.), *Cutting-Edge Social Media Approaches to Business Education: Teaching With LinkedIn, Facebook, Twitter, Second Life, and Blogs*. USA: Information Age Publishing, pp. 217-240.